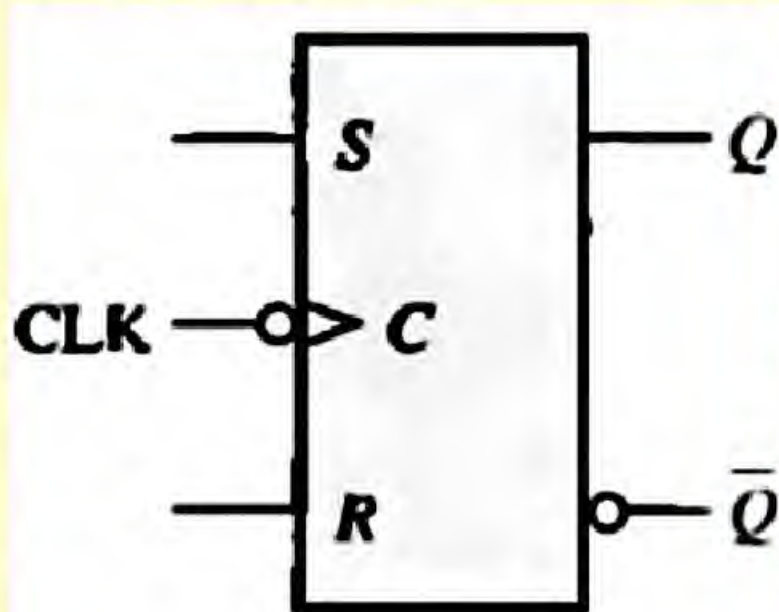
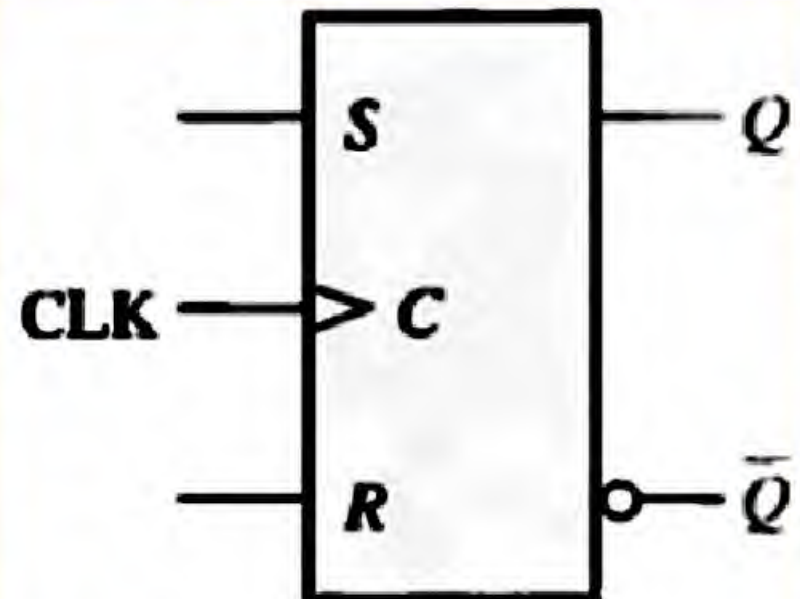


Q5: Two edge-triggered S-R flip-flops are shown in Figure 5. If the inputs are as shown. Draw the Q output of each flip-flop relative to the clock, and explain the difference between the two. The flip-flops are initially **RESET**.



(a)



(b)

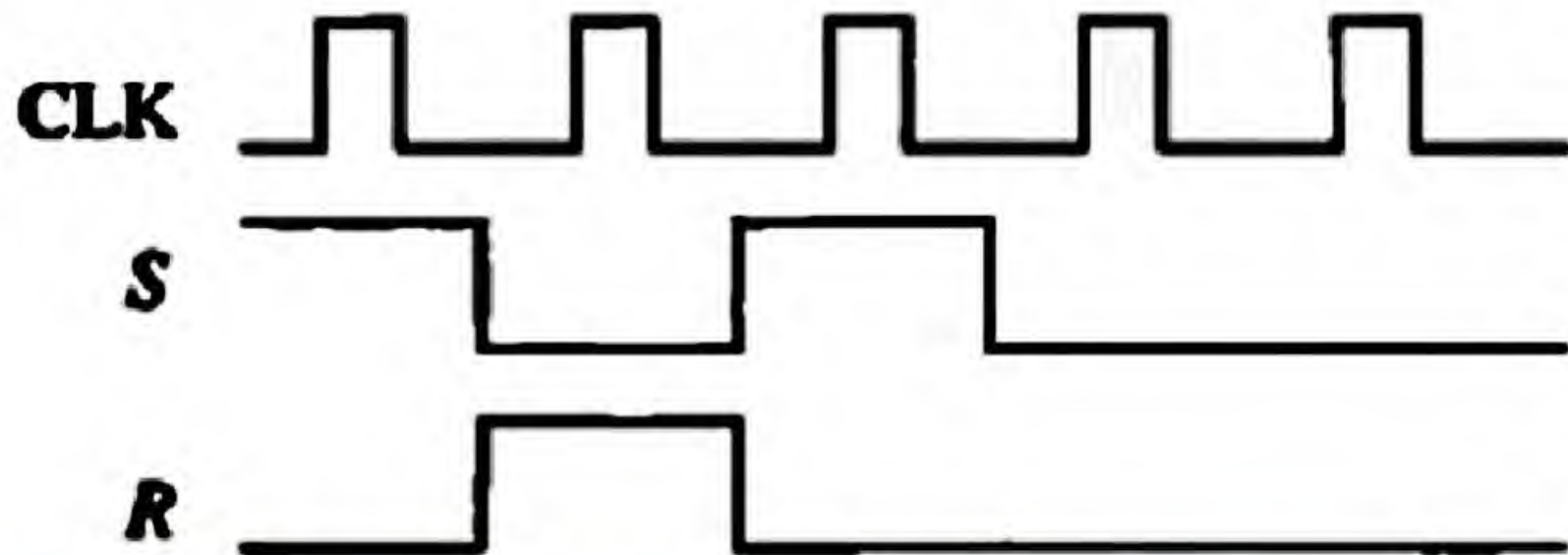


Figure (5)

Q6: The Q output of an edge-triggered S-R flip-flop is shown in relation to the clock signal in Figure 6. Determine the input waveforms on the S and R inputs that are required to produce this output if the flip-flop is a positive edge-triggered type.

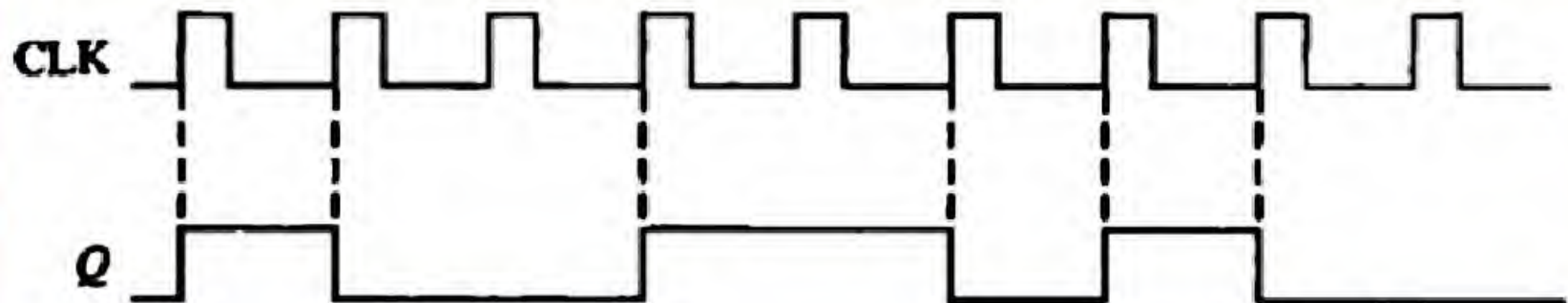
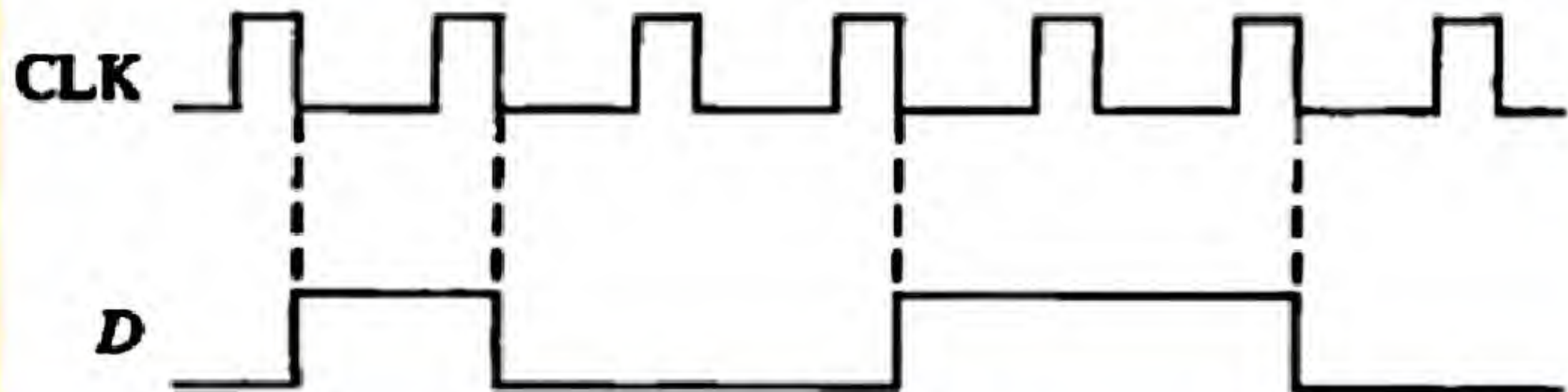
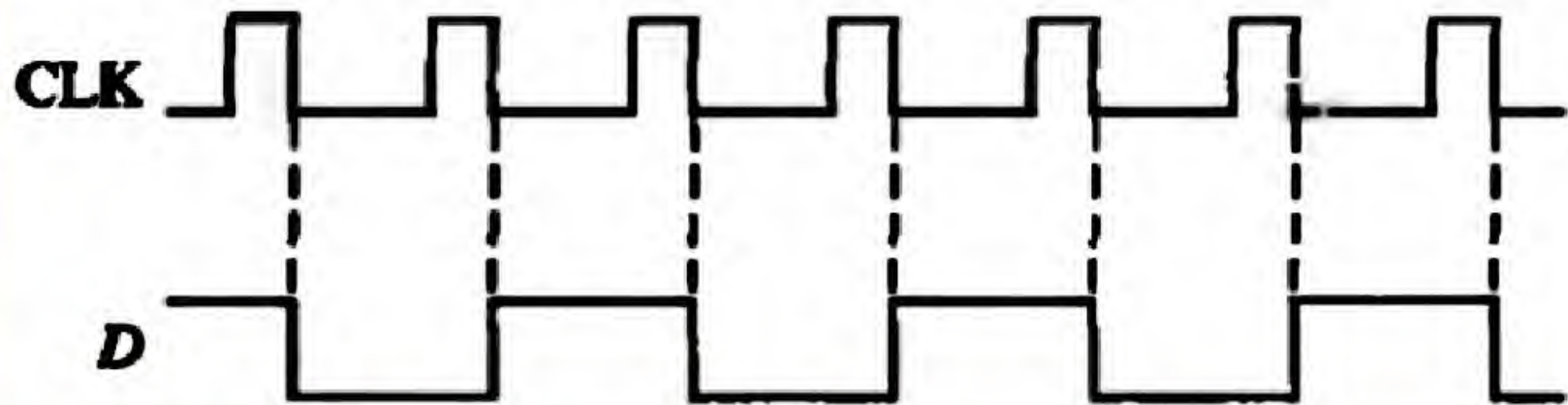


Figure (6)

Q7: Draw the Q output relative to the clock for a D flip-flop with the inputs as shown in Figure 7. Assume positive edge-triggering and Q initially LOW.



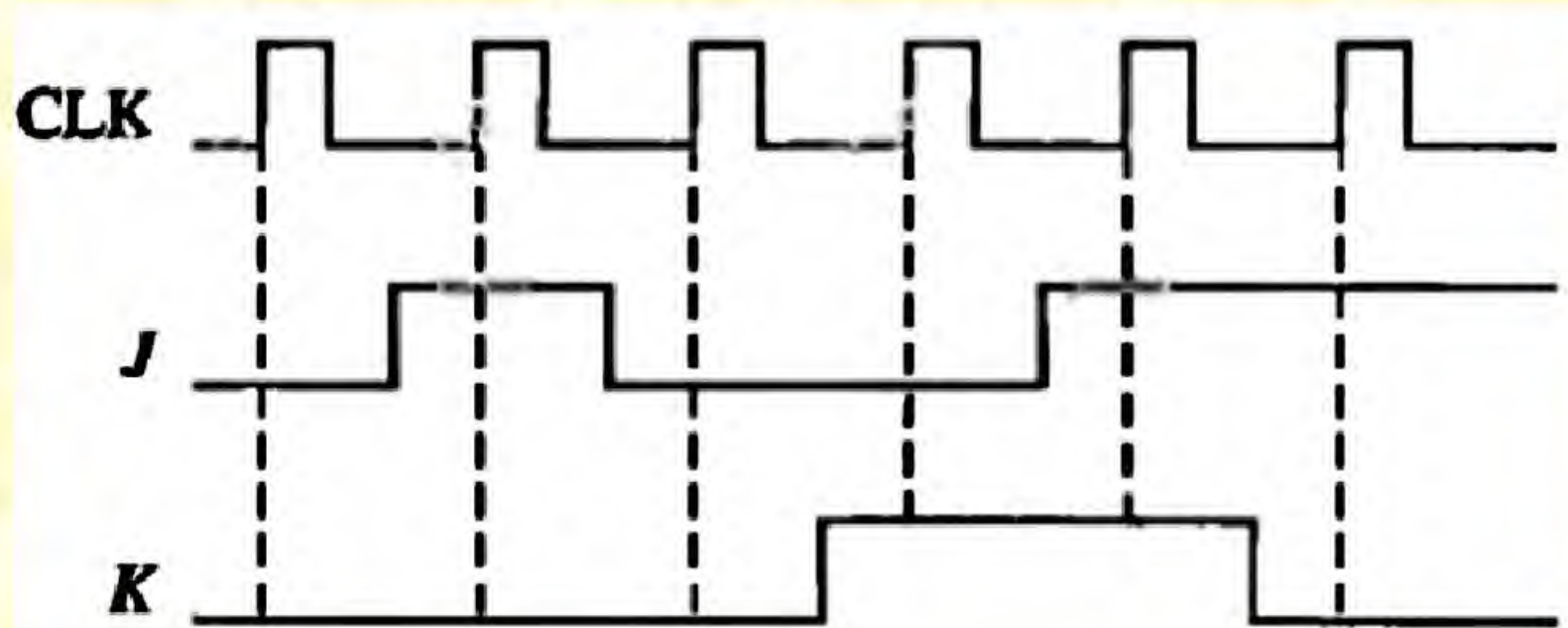
(a)



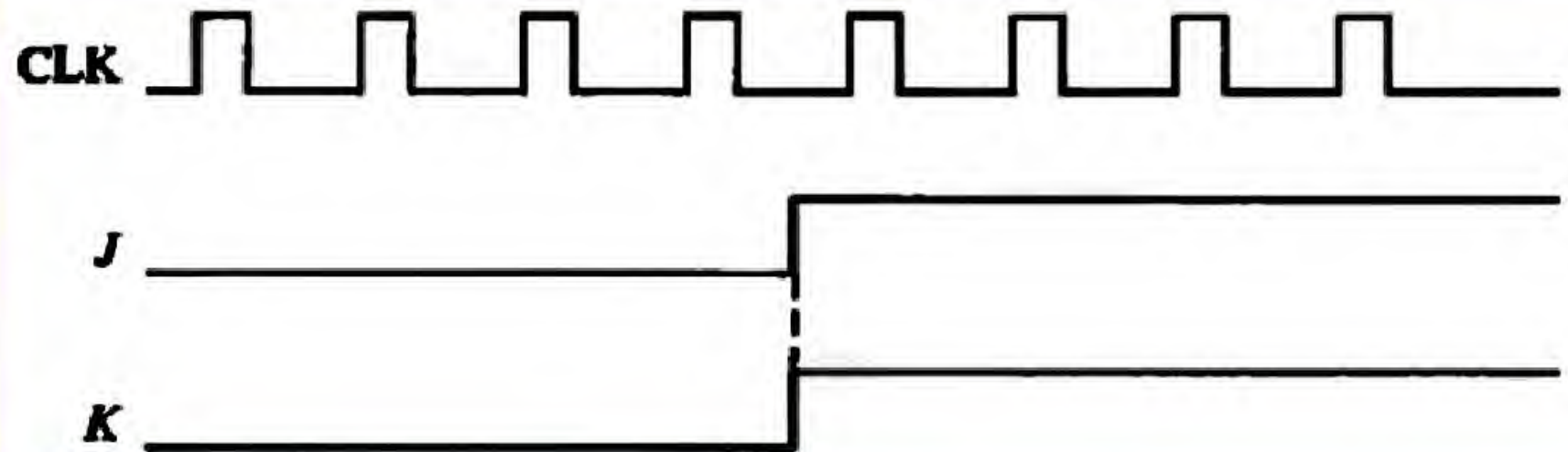
(b)

Figure (7)

Q8: For a positive edge-triggered J-K flip-flop with inputs as shown in Figure 8, determine the Q output relative to the clock. Assume that Q starts LOW.

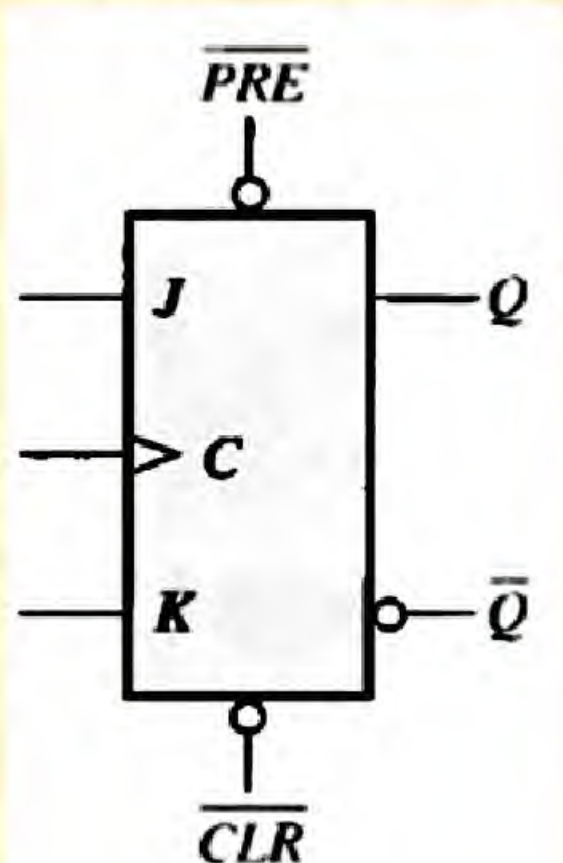


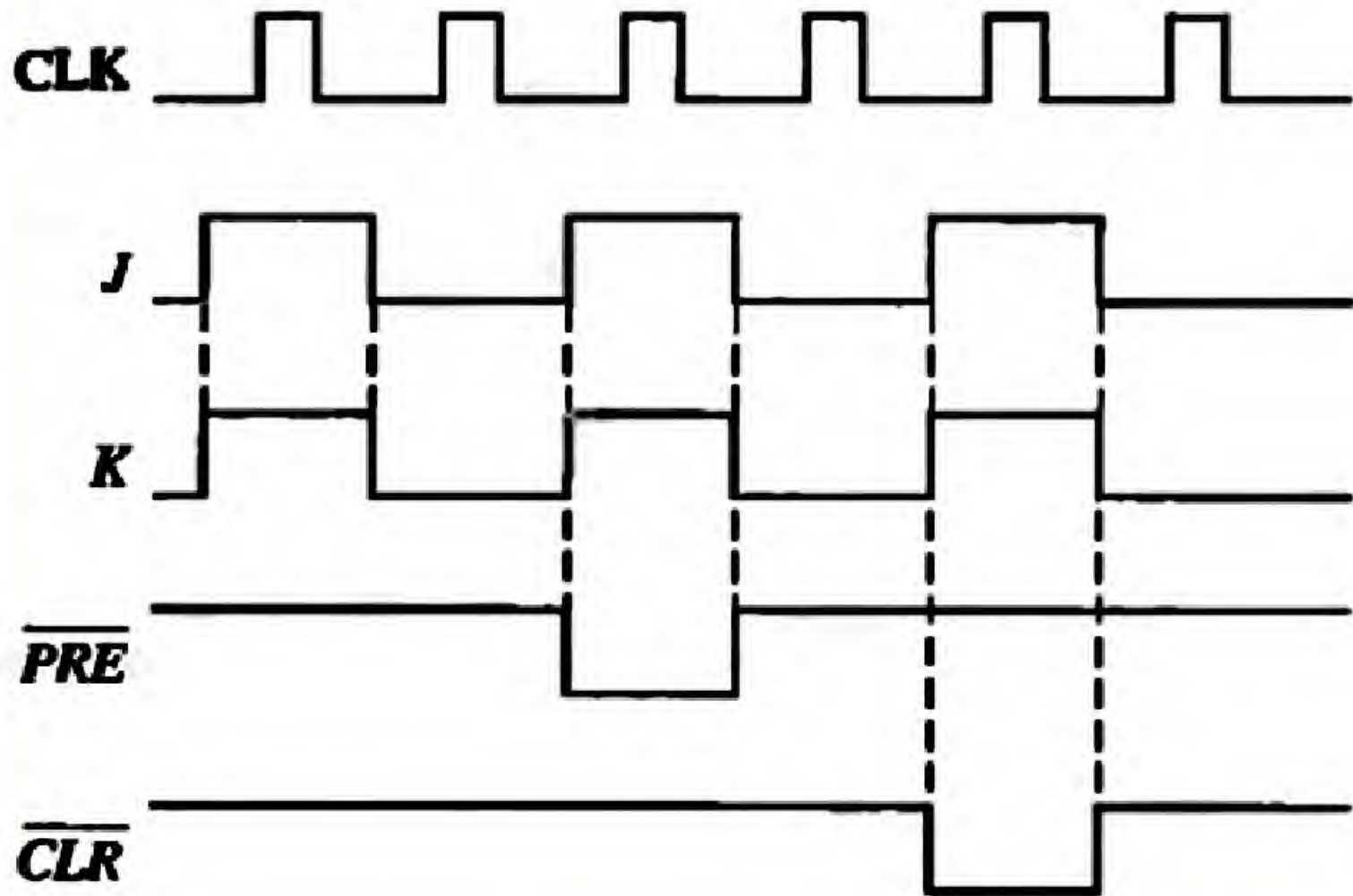
(a)



(b)

Q9: Determine the Q waveform relative to the clock if the signals shown in Figure 9 are applied to the inputs of the J-K flip-flop. Assume that Q is initially LOW.





Q10: For a negative edge-triggered J-K flip-flop with the inputs in Figure 10, develop the Q output waveform relative to the clock. Assume that Q is initially LOW.

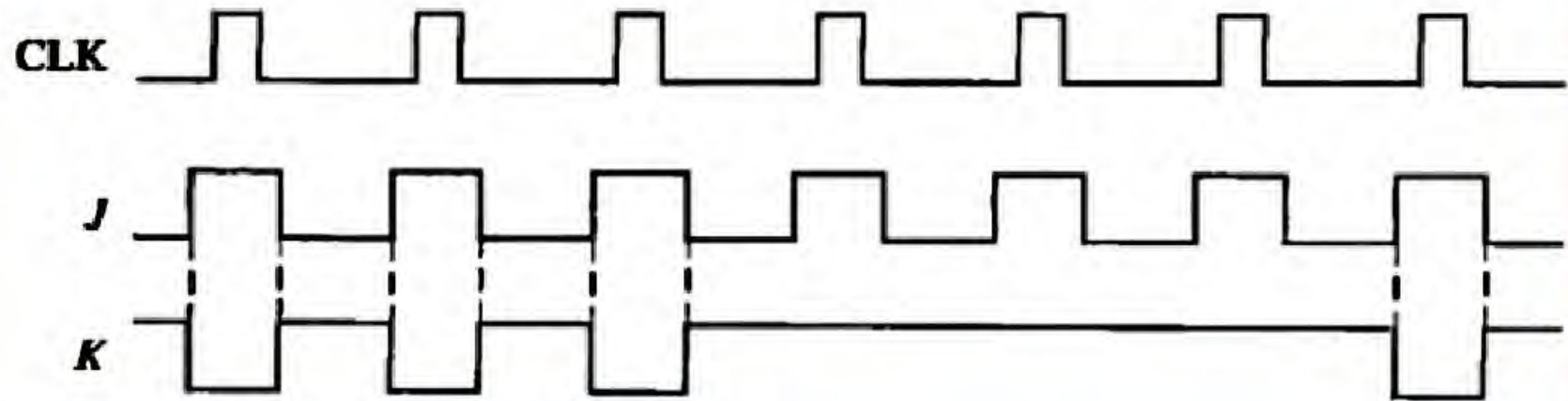


Figure (10)